



New Hampshire Public Utilities Commission Model Propane Operating & Maintenance and Emergency Plans

The New Hampshire Public Utilities Commission, courtesy of the Maine Public Utilities Commission, is providing these Model LPG Operation & Maintenance and Emergency Plans to assist jurisdictional propane facilities operators in complying with state statutes and regulations within the Commission's jurisdiction. The Commission's regulations specifically adopt 49 Code of Federal regulations, Parts 192.605 and 192.615, however, this model plan is only intended to assist in compliance with state, not federal laws.

[Company Name]

Liquefied Petroleum Gas
(Propane)

**Operations & Maintenance
and Emergency Plans**

[COMPANY NAME]

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INTRODUCTION

Title 49 USC 601- is the law that requires the U.S. Department of Transportation (DOT) to develop and enforce minimum safety regulations for the transportation of gases by pipeline. Safety regulations became effective in 1970, and are published in Title 49 of the Code of Federal Regulations (CFR), Parts 190, 191, and 192. The Office of Pipeline Safety of DOT's Research and Special Programs Administration (RSPA) is charged with their enforcement.

A. This O&M plan applies only to LP-gas jurisdictional systems. It does not apply to systems that have:

1. Fewer than 10 customers serviced from a single or manifolded source if no portion of the system is located in a public place; and,
2. Single-tank, single-customer gas systems located entirely on the customer's premises, but partially in a public place (the term 'public place' means a place which is generally open to all persons in a community as opposed to being restricted to specific persons. Churches, restaurants, schools, and commercial buildings as well as any publicly owned right-of-way or properties which if frequented by persons are public places).

Therefore systems with ten or more customers from a single source no matter where the location is are jurisdictional systems. Systems with more than one customer are jurisdictional systems if any portion of the system is in a public place (see above definition of public place). One or more LP systems under common ownership and control, wherein the combined systems have a capacity to serve 10 or more users in a single building would also be jurisdictional.

3. The pipeline safety code states that operators of all gas systems must:
 - Deliver gas safely and reliably to customers;
 - Provide training and written instruction for employees;
 - Establish written procedures to minimize the hazards resulting from gas pipeline emergencies; and,
 - Keep records of inspections and testing.

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GENERAL INFORMATION

Enforcement Agency

The enforcing agency for New Hampshire gas safety rules is the New Hampshire Public Utilities Commission/Safety Division. New Hampshire Statute RSA 362:46 III provides jurisdiction to the Commission. The Commission rule that will be enforced is Chapter PUC 500.

Penalties for Non-compliance

Non-compliance may subject the Operator to civil or criminal penalties. If the hazards warrant, a "Hazardous Facility Order" may be issued to shut down the system.

Definitions and Terms

To understand this manual, system gas operators need to know the meaning of some commonly used terms in the gas industry. The terms are defined below for the purpose of this guidance manual. The reader is referred to 49 CFR Part 192 and ANSI/NFPA Standards for additional definitions.

CATHODIC PROTECTION -a procedure by which underground metallic pipe is protected against corrosion.

CUSTOMER METER - A device that measures the volume of gas transferred from an operator to the consumer.

LP-GAS OPERATOR- An LP-gas operator could be a gas utility company, a municipality, an individual or supplier operating an LP-gas system in a housing project, apartment complex, condominium, mobile home park, shopping center or other systems as defined by jurisdictional LP-Gas Systems in the introduction of this O&M&E plan.

INCIDENT-An event that involves a release of gas from a pipeline facility that results in: (1) a death or personal injury necessitating in-patient hospitalization; (2) estimated property damage of \$50,000 or more; or (3) an event that the operator deems significant.

LP-GAS-See Petroleum Gas

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MAIN-An LP-gas distribution line that serves as a common source of supply for more than one service line.

MUNICIPALITY-A city, county, or any other political subdivision of a state.

OPERATIONS AND MAINTENANCE PLAN-Written procedures for operations and maintenance on LP-gas systems.

PIPELINE-All facilities through which gas moves in transportation. This includes pipes, valves and other items attached to the pipe, meter stations, regulator stations, delivery stations, and fabricated assemblies.

POUNDS PER SQUARE INCH GAUGE PRESSURE (psi)-An abbreviation for pounds per square inch gauge pressure.

PRESSURE REGULATOR-Automatically reduces and controls the gas pressure in a pipeline downstream from a higher-pressure source of LP-gas.

SERVICE LINE -A gas distribution line that transports gas from a common source of supply to a customer's meter, or to the connection to a customer's piping if the piping is farther downstream or if there is no meter.

SERVICE REGULATOR-A device designed to reduce and limit the gas pressure provided to a customer.

SERVICE RISER-The section of a service line, which extends out of the ground and is often near the wall of a building. This usually includes a shut-off valve and a service regulator.

SHUT-OFF VALVE-A valve installed to allow shut-off of the gas supply to a building. The valve may be located upstream of the service regulator, below ground at the property line or where the service line connects to the main.

49 CFR-Title 49 of the Code of Federal Regulations (CFR). This document contains the actual safety regulations that must be complied with by the LP-gas operator when NFPA 58 is silent on an issue. Parts 191 and 192 of 49 CFR contain the federal pipeline safety regulations relevant to operators of jurisdictional LP-gas pipeline systems.

Commonly Abbreviated Organizations

AGA- American Gas Association.

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ANSI-American National Standards Institute, formerly the United States of America Standards Institute (USASI). All current standards issued by USASI and ASA have been redesignated as American National Standards Institute and continue in effect.

API-American Petroleum Institute.

ASME-American Society of Mechanical Engineers.

ASTM-American Society for Testing and Materials.

DOT-U.S. Department of Transportation

OPS-Office of Pipeline Safety. The pipeline safety division of the DOT's Research and Special Programs Administration.

MSS-Manufacturers Standardization Society of the Valve and Fittings Industry.

NACE-National Association of Corrosion Engineers.

NARUC-National Association of Regulatory Utility Commission

NFPA- National Fire Protection Association.

RSPA-Research and Special Programs Administration. A major subdivision of the DOT responsible for development and enforcement of the pipeline safety regulations.

Accident and Incident Reporting - Federal-191.5, 9(a), 9(b)

Telephone an incident report at the earliest possible moment, **but in any case within two hours: 49 CFR 191.5**

- ✓ of a release of LP-gas from a system involving:
- ✓ a death or personal injury requiring hospitalization, or
- ✓ damage, including the cost of LP-gas lost, of \$50,000 or more; or
- ✓ when there is an event that is significant in the judgment of the operator, even though it was not described above.

The telephone incident report is made to the National Response Center at:

TOLL FREE (800) 424-8802
IN WASHINGTON, D.C. (202) 267-2675
24 HOURS EVERY DAY

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An incident requiring a telephone report must be followed by a written report. **49 CFR 191.9 (a)**

When additional relevant information is acquired a supplemental report will be filed that clearly ties back to the original report as required by **49 CFR 191.9 (b)**.

Address for Incident Reports

All required reports must be submitted as soon as practicable but no later than 30 days to:

Information Resources Manager
Office of Pipeline Safety
Research and Special Programs Administration
Nassif Building, Room 2335
400 Seventh Street, SW
Washington, D.C. 20590

Emergency, Accident and Incident Reporting- State

To the New Hampshire Public Utility Commission/Safety Division

Telephone an emergency report at the earliest possible moment, **but in any case within two hours:**

- ✓ of a release of LP-gas from a system involving:
- ✓ a death or personal injury requiring hospitalization, or
- ✓ damage, including the cost of LP-gas lost, of \$5,000 or more, or
- ✓ when there is an event that is significant in the judgment of the operator, even though it was not described above.
- ✓ A fire or explosion at, or emergency shutdown of, LPG system/facility
- ✓ An evacuation of a building conducted by a fire department, operator or other emergency personnel because of the presence of gas in the atmosphere or in, or in the immediate vicinity of, the building;
- ✓ An unplanned service interruption or gas outage that is expected to result in 50 or more customer outage hours;
- ✓ A single outage occurring at a state, federal, or municipal facility, hospital, school or other facility in which the public could be affected; or

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- ✓ An event which is significant in the judgment of the operator, even though it is not described above.

The telephone call should be made to the New Hampshire Public Utilities Commission/Safety Division during regular business hours at (603) 271-6022. After hours calls should be made to David Burnell at (603) 419-0169.

Accident Reporting

Notify the Commissions Safety Division in writing of any accident within 10 working days following the occurrence of any accident involving a release of LP gas from a pipeline or LPG facility in which:

- ✓ A death has occurred;
- ✓ Any personal injury which requires in-patient hospitalization;
- ✓ Any person receiving an injury which incapacitates that person from active work for a total of 6 days or more during the 10 days immediately following the accident; or
- ✓ Any property damage over \$5,000 ;

If any event later occurs in connection with an accident which renders an accident reportable under this section or significantly changes the circumstances of a report previously submitted, the utility shall submit a new or updated report, as appropriate.

Incident Reporting.

- ✓ The commissions Safety Division will be notified within 20 days following discovery, any incident which shall be required to be reported to the Federal Office of Pipeline Safety pursuant to 49 C.F.R. 191.9, the report shall be made to the commission on Federal Department of Transportation form RSPA F 7100:1, which is entitled, "Incident Report-Gas Distribution System";
- ✓ Report twice annually on the status of any ongoing leaks occurring in the gas distribution systems; and

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- ✓ When additional relevant information is obtained after a report has been submitted, a supplementary report will be submitted to the commissions/safety division conveying this information.

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Safety Related Condition Reports - 191.23

OPS require operators of LP-gas systems to report certain safety-related conditions.

A written report must be filed within five working days after the operator first determines that a "safety related condition" exists, but not later than ten working days after the day the operator discovers the condition.

Each operator is also required to update its operations and maintenance plan to include instructions enabling personnel who perform operation and maintenance activities to recognize conditions that may be safety-related conditions.

Typical conditions that would need to be reported by a small operator include:

- unintended movement or abnormal loading of pipeline facilities by environmental causes such as earthquakes, landslides, or floods, that impairs the serviceability of a pipeline;
- any malfunction or operating error that causes the pressure of a pipeline to rise above its maximum allowable operating pressure plus the pressure build-up allowed for operation of pressure limiting or control devices;
- a leak that constitutes an emergency and is not repaired within five days of determination;

Safety related conditions that do not require a report include:

- condition on a customer-owned service line;
- a condition resulting in an incident, as defined in **49 CFR 191.3**;
- a condition on a pipeline more than 220 yards from any building or outdoor place of assembly, unless it is within the right-of-way of an active railroad, paved road, or highway;
- a condition that is corrected before the report-filing deadline, except for certain corrosion related conditions.

See **49 CFR 191.23 (b)** for further information.

Address for Safety-Related Condition Reports

All required written reports must be submitted to:

Information Resources Manager
Office of Pipeline Safety

[Company Name]
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Research and Special Programs Administration
Nassif Building, Room 2335
400 Seventh Street, SW
Washington, D.C. 20590

Annual Distribution Report - 191.11

For all company systems that serve 100 or more customers from a single source the company will submit each year, not later than March 15, an Annual Report for Gas Distribution System (DOT Form RSPA-F 7100.1-1), with a copy to Office of Pipeline Safety and a copy to the state.

[Company has no such systems.]

[Or insert list of systems with 100 or more customers.]

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OPERATION AND MAINTENANCE PLAN – 192.605

Training & Review - 192.605(a)

These procedures shall be reviewed at least once per year with all persons who may be employed in the installation, operation, maintenance, repair, testing and surveys of a gas system subject to fed/state law. Document such training on a Training Verification Form. This manual will also be reviewed by **[insert the title of the person doing the reviewing]** at least annually, but not to exceed 15 months, to ensure changes/updates to 49 CFR and New Hampshire regulations are incorporated.

Written Procedures - 192.605(a), 605(b)(3)

[Insert Company Name] will maintain a set of written procedures for the operation and maintenance of jurisdictional gas systems, called Operations and Maintenance (O&M) Plan and an Emergency Plan.

In addition, a supplementary folder is to be maintained for each gas system that would fall under the jurisdiction of the New Hampshire Public Utilities Commission. This supplementary folder is to include information specific to the gas system, such as key valve locations, type of regulator set up used, history, etc. Records of the annual work required on the system are also kept in this folder. Folders will be made available to all of the appropriate personnel along with the O&M Plan and the Emergency Plan.

Instruction for Employees - 192.605(b)(8)

This manual covers operating, maintenance and emergency procedures that shall apply to all gas systems under the jurisdiction of the New Hampshire Public Utilities Commission.

1. The procedures outlined are based on the requirements found in 49 CFR, Part 192 and NFPA 58. When conflicts arise between 49 CFR and NFPA 58 then NFPA 58 prevails. See **192.11**
2. Work done by personnel following this manual will be periodically reviewed and any discrepancies found between the work and the manual shall be corrected either by retraining personnel or a revision to the manual.

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Installation Procedures (*Training Guide for Operators of Small LP-Gas Systems*)

Make all installations in accordance with NFPA 58, and 49 CFR. Use the Training Guide for Operators of Small LP-Gas Systems as a useful guide.

When repairs are required, be aware of the materials that are in the system. Records indicating the type of materials and location of the piping and systems parts are essential. **Appendix M attached to this document contains manufacturer's instructions for materials used on the companies jurisdictional systems.** <Insert manufacturer's instructions for materials used behind Appendix M at the end of this manual> If such records are not available for the system, develop or secure them by:

1. Contacting the previous owners of the system;
2. Contacting the contractor who installed the system;
3. Checking local permits; or
4. Carefully exposing the pipe in certain locations to determine the type of material.

Damage Prevention (Chapter Puc 800) - 192.605(b)(9)

The company is required to be a member the New Hampshire damage prevention system. The locations of all accounts with underground facilities have been listed with Dig Safe, Inc. The responsibilities of members can be found in Chapter Puc 800 of the New Hampshire Public Utilities Commission's rules.

Before the company can begin an excavation, the boundaries of the area must be pre-marked in white paint, flags or stakes and Dig Safe must be notified by calling 1-888-DIGSAFE (1-888-344-7233). Also, all utilities that are not a member of Dig Safe, Inc. must be notified directly.

Unless advised by Dig Safe and each non-member that there are no underground facilities within the premarked area, there is a 72-hour waiting period before excavation can begin to allow for the underground utilities to be marked.

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CAUTION: Service lines and mains installed prior to enactment of minimum depth requirements may be very shallow; therefore, when uncertain, use hand tools when digging until the lines are located.

Where construction and/or maintenance projects are in progress, and trenches or ditches are left open in the absence of company employees, cover the openings, install barricades or rope, and mark with “**DANGER**” signs.

CAUTION: Where there is a ditch or hole in which propane, methane, hydrogen sulfide or other gases may be present in a volume to displace the oxygen, do not enter the space until it has been cleared of the gas. If it is necessary to enter the space before it is cleared, follow the safety requirements for confined spaces, and use a respirator (Follow 29 CFR, Part 1910) when necessary and 192.605 (b)(9).

Operator Qualification- 192.805

Individuals performing covered tasks on a pipeline facility will meet operator qualifications. Such covered tasks include but are not limited to any activity that

- (1) Is performed on a pipeline facility whether new or existing;
- (2) Is an operations, maintenance or new construction task;
- (3) Is performed as a requirement of this part; and
- (4) Affects the operation or integrity of the pipeline.

Pipe Installation, Repair and Replacement

Bury service lines to a minimum of 18 inches and gas mains to a minimum of 24 inches, and at greater depths where soil erosion is prevalent or where required by local codes.

Steel Pipe Installation

1. Use schedule 80 pipe for liquid service and vapor service over 125 psi, welded or threaded; however, Schedule 40 pipe may be used if welded. Schedule 40-threaded pipe may be used for vapor service under 125 psi.
2. Fittings and valves used at pressures higher than container pressure shall be suitable for a working pressure of at least 350 psi; those used at pressures equal to container pressure (liquid or vapor) shall be suitable for a working pressure of 250 psi; those used at vapor pressures under 125 psi shall be suitable for working pressures of 125 psi.

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3. Welding on pipelines must be performed only by welders, in-house or outside personnel, who are qualified in accordance with Section IX of the ASME Boiler and Pressure Vessel Code as is described in NFPA 58.

Copper Tubing Installation

1. Copper tubing may be used where authorized by the authority having jurisdiction and in accordance with the specifications and installation requirements in NFPA 58.
2. Tubing must be soft copper and meet the specifications for Seamless Copper Tubing for Air Conditioning and Refrigeration Field Service, Type K or L.
3. Fittings must be brass and connections made with heavy duty forged flare nuts.

Plastic Pipe Installation

Plastic pipe (Polyethylene or PE pipe) may be used where authorized by the authority having jurisdiction and in accordance with the provisions of NFPA 58.

PE Pipe Installer Qualifications - 192.285

1. All employees installing PE pipe and making joints are to be trained by a representative of the pipe manufacturer or distributor of the pipe in accordance with the provisions of **192.281** through **192.283**.
2. Training in heat fusion will include the making of a minimum of (3) satisfactory welds. Records are maintained on all qualified employees.
3. An employee must be requalified in accordance with the provisions of **192.285** if he (she) does not make any joints within a 12-month period.
4. All outside contractors installing PE pipe must show evidence of being certified in accordance with DOT requirements.

Installation Requirements

1. PE pipe must be manufactured according to ASTM D-2513 specifications and marked with the manufacturer's name or trademark, the SDR (Standard Dimension Ratio) of the pipe, the size of the pipe, the designation "PE", the date manufactured and the designation ASTM D-2513. All PE pipe installed in a new system should be from the same manufacturer.

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2. Before using plastic valves, consult with the PE pipe manufacturer or a knowledgeable distributor.
3. The maximum service pressure permissible for PE piping is 30 psi, and should be as low as practicable(= 15 psi) to prevent re-liquefaction.
4. Bury PE pipe directly in the ground, or use it to replace a deteriorated buried metal pipe. In the latter case, a slightly smaller PE pipe may be inserted into the existing metal pipe, providing the PE pipe will be of adequate size to supply demand. Protect PE pipe from gouges and scratches from the steel pipe ends.
5. Joining may be accomplished by using heat fusion, butt or socket welding, or mechanical fittings compatible with the pipe being used, and in accordance with the instructions by the manufacturer of the fittings. Detailed procedures for heat fusion may be found in- [Name the manufacturer's instructions for the brand being used].
6. Install all PE pipe below ground. Bring the service above ground by use of an anode less riser with appropriate mechanical fittings. No PE pipe shall be exposed aboveground. Do not use risers to support external loads.
7. Support PE pipe along its entire length with properly tamped and compacted soil. Backfill with sandy soil.
8. Where PE pipe is laid in an area where there has been digging and backfilling, and it appears the backfill may settle, prevent shear and other stress concentrations at valves, connectors and plastic-to-pipe transition fittings by using external stiffeners or sleeves.
9. Provide adequate slack through "snaking" to prevent pullout or separation of a joint from expansion and contraction of the pipe caused by temperature changes. PE pipe will expand or contract 1 inch for each 10 degrees temperature change for every 100 feet of pipe.
10. Take special care to prevent coal tar type coatings or petroleum base tape from contacting the plastic pipe, as it may cause plastic pipe to deteriorate.
11. PE pipe may be inserted into metal pipe to protect it from damaging soil conditions, vehicular traffic, or as a replacement for an existing main or service line. Protect the PE pipe from damage during the insertion process. In addition, take measures to prevent water from accumulating and freezing in the sleeve and damaging the PE pipe.

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12. Install valves or valve enclosures in a manner that will protect the PE pipe from excessive torsional (twisting) or shearing (cutting) loads when the valve is operated.
13. Install warning tape as close to the surface as practical and a #14 coated copper trace wire under the entire run of PE pipe, separated by at least 6 inches of fill, to aid in locating the pipe. Separation will be maintained between the tracer wire and the PE pipe for the entire run of pipe.
14. LP-gas vapor flowing through PE pipe creates a static charge. Take the following precautions to avoid ignition when there is a possibility of a flammable gas-air mixture being present:
 - (a) Use a cotton tape or burlap conductor wetted with a water/soap solution, grounded with a metal pin driven into the ground, and lay it in contact with the section of exposed pipe.
 - (b) If a gas mixture may already be present, wet the pipe from the ground end with a mild soap solution, and then apply the cotton tape or burlap.
 - (c) Wet the cotton tape or burlap occasionally with water/soap solution.
15. Do not vent gas through ungrounded PE piping in a ditch or excavation, vent to a remote location.

Continuing Surveillance - 192.613

- A. Maintain a continuing surveillance of each facility to determine and take appropriate action concerning failures, leakage history, substantial changes in cathodic protection requirements or other unusual operating or maintenance conditions. This surveillance can be accomplished by training employees to be alert when on-site for any unusual or potentially unsafe condition, and by a periodic review of the inspection and test records of the facility.
- B. Segments of pipelines that may become unsafe must be replaced, repaired, or removed from service. Any hazardous leak must be repaired in a prompt manner. If any segment of the facility is determined to be in an unsatisfactory condition, but no immediate hazard exists, initiate a program to recondition or phase out the segment.

Odorization - 192.625

The Company purchases odorized gas for resale. Verify this odorant by “sniff testing” whenever gas is delivered to the storage tank(s) or service is performed on

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the system, If gas is delivered by transport, the transport driver is to determine the presence of odorant at the time of delivery. Persons performing the “sniff tests” must allow sufficient time between test points to ensure their sense of smell was not affected by the previous test (See NFPA 58 Chapter 1). **Record the results.**

Tapping or Repairing Lines Under Pressure - 192.627

Steel Pipe. All taps made on steel pipe, whether pressurized or de-pressurized, are to be made by qualified persons. Where taps or repairs must be made on a pressurized line, obtain approval and directions from the- **[name the title of the operational supervisor]**.

A. The following are minimum guidelines when working on de-pressurized lines:

1. Reduce the pressure in the pipe to 0 psi.
2. Ensure there is enough room in the excavation to work safely.
3. Special precautions for cathodically protected pipe: Cathodic protection electrical currents will be interrupted by the separation of the pipe, with possible spark ignition of any gas vapors that may be present. Attach a jumper wire on the piping so that electrical continuity will be maintained.

AFTER REPAIRS HAVE BEEN COMPLETED, REMOVE THE JUMPER WIRE, AND WRAP OR COAT ALL EXPOSED BARE STEEL PIPE AND VALVES BEFORE BACKFILLING.

Plastic Pipe. The affected section of pipe can be isolated using (2) “pinch tools”. Slowly release the gas trapped in the isolated section through a partial opening to zero psi.

CAUTION: When releasing gas in an excavation, the escaping gas can displace the oxygen and can cause asphyxiation. Use a positive pressure respirator if you remain in the excavation during the de-pressurizing. Ensure the excavation has been thoroughly ventilated before resuming work.

CAUTION: When releasing gas ensure that no ignition sources are present, including clothing that can create a static buildup.

[Company Name]

CAUTION:

Purging - 192.629

- A. Purge lines after installation or repair and before placing in operation. Whenever a line is purged of air, take care to ensure that the gas is released into one end of the pipe in a moderately rapid and continuous flow to prevent a hazardous mixture of gas and air from forming within the pipe. If necessary, a slug of inert gas may be used to keep the gas and air from mixing. Also take care to ensure that a flammable mixture is not released within a confined space or near ignition points. Since complete purging may be of a short duration, do not leave the point of discharge unattended during purging.
- B. Whenever a line is purged of gas, take care to ensure that the air is released into one end of the pipe in a moderately rapid and continuous flow to prevent a hazardous mixture of gas and air from forming within the pipe. When purging lines 3 inches and larger, use an inert gas (nitrogen or carbon dioxide) to displace the gas.
- C. **NEVER USE OXYGEN FOR PURGING.**

Maintenance of Lines that Become Unsafe - 192.703(b), 703(c)

If any part or section of a system becomes unsafe then [Insert Company Name] will repair or replace that part or section or remove that section from service. Any hazardous leaks will be repaired promptly.

Pipeline Markers - 192.707

Install a line marker over each buried main as close as practical to where the main crosses a road, street or railroad; on aboveground lines where accessible to the public; or whenever necessary to identify the location of the pipe to reduce the possibility of damage to the system. In class three and four locations where a damage prevention program exist markers are not normally used.

Marker warning. The following must be written legibly on a background of sharply contrasting color on each line marker:

- (1) The word "Warning," "Caution," or "Danger" followed by the words "Gas (or name of gas transported) Pipeline" all of which, except for markers in heavily

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developed urban areas, must be in letters at least 1 inch (25 millimeters) high with ¼ inch (6.4 millimeters) stroke.

- (2) The name of the operator and telephone number (including area code) where the operator can be reached at all times.

Patrolling and Inspection - 192.721

- A. The company will determine the frequency of patrolling mains and/or tanks by determining the severity of the conditions that could cause failure or leakage, with consequent hazards to public safety.
- B. As a minimum, patrol mains and/or tanks located in areas where the piping and/or tanks may be subject to potential damage by ground movement, flooding, or loss of support at least 4 times per year, with intervals not exceeding 4-1/2 months, by walking along the pipeline and observing factors affecting the safe operation. Patrolling may be done in conjunction with the leakage survey. Include in the inspection:
1. External corrosion of aboveground pipe.
 2. The general condition of regulators and meters.
 3. Whether line markers are properly displayed.
 4. Determine if any construction or excavation that might affect the pipeline is taking place in the immediate area.
 5. The condition of the valves and fittings on aboveground tank(s), to include ensuring there are no combustibles or flammables within 10 feet. The condition of the valves and fittings in an underground dome, including whether there is proper dome drainage. **Record the results.**

Leakage Survey - 192.723

- A. Schedule annual leakage surveys or more frequently as may be required by the nature and age of the system and local soil conditions. Use a CGI (Combustible Gas Indicator) to make this survey, or a pressure drop leakage test can be performed. All pressure drop tests shall be conducted according to Appendix D of NFPA 54. **(See Appendix A for further instruction).**

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Reinstating a Service Line - 192.725

Whenever a service line is physically disconnected from a main the line is retested as if it were a new line. If temporarily disconnected then test from the point of disconnection. **Document your actions.**

Abandonment of Facilities - 192.727

When a gas main or service line is abandoned, physically disconnect it from the piping system, vent it to the outdoors in a safe manner, and seal the ends with a plug or cap. Purge lines 3 inches or larger with nitrogen or carbon dioxide. **Document all abandonment's.**

Regulators and Overpressure Protection - 192.739

It is important that all systems operate within their intended acceptable pressure limits. Devices must be maintained annually to ensure that they are:

- in good mechanical condition
- capacity is adequate
- set to function at correct pressure
- properly installed and protected from vehicular traffic, dirt, liquids, icing and other conditions that might prevent proper operation



First Stage: All first-stage regulators will incorporate an integral pressure relief valve having a start-to-discharge setting within the limits specified in the Standard for LP-Gas Regulators, UL 144. When the regulator is of such a capacity that internal relief is not adequate or available to meet capacity then an external relief can be used and will be sized by the manufactures recommendations.

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Second Stage: [Insert Company Name] uses second-stage regulators with a maximum outlet pressure setting of 14 in. W.C. and are equipped with the following:

An integral pressure relief valve on the outlet pressure side having a start-to-discharge pressure setting within the limits specified in the Standard for LP-Gas Regulators, UL 144. This relief device shall limit the outlet pressure of the second-stage regulator to 2.0 psi when the regulator seat disc is removed and the inlet pressure to the regulator is 10.0 psi or less as specified in the Standard for LP-Gas Regulators, UL 144.

Regulators with a rated capacity of more than 500,000 Btu/hr can use a separate overpressure protection device complying with paragraphs 2.9.2 through 2.9.8 of the National Fuel Gas Code, NFPA 54 (ANSI Z223.1). The overpressure protection device shall limit the outlet pressure of the regulator to 2.0 psi when the regulator seat disc is removed and the inlet pressure to the regulator is 10 psi or less.

High Pressure Regulator System: Whenever a high pressure regulator feeds multiple second stage regulators then the company will use a first stage regulator down stream of the high pressure regulator and upstream of the second stage regulators.

If the high-pressure regulator has an overpressure protection device (either integral or separate), has a rated capacity of more than 500,000 Btu/hr and the second stage regulator incorporates an integral or separate overpressure protection device then the first stage regulator is not needed. This overpressure protection device for the second stage regulator will limit the outlet pressure of the second stage regulator to 2.0 psi when the regulator seat disc is removed and with an inlet pressure equivalent to the maximum outlet pressure setting of the high-pressure regulator.

The company may use any of these installation methods. **See systems report(s)** to see what type of regulator setup the company used for a particular system. A sample Systems Report is included as Appendix C. The Systems Report is kept in the systems folder.

A. Install regulators in accordance with NFPA 58.

1. The system used is usually a two-stage system and never a single stage system.
2. Where considered necessary as a protection against system failure, install (2) first-stage regulators in parallel to serve the storage or manifolded tanks. One of the regulators is to function as the primary and be set at the required distribution pressure; the second is to serve as the backup and be set at about 1 psi lower.

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3. Use regulators equipped with high capacity internal relief valves. If a pressure regulator is not so equipped, install an in-line relief valve with the appropriate start-to-discharge pressure at the outlet of the regulator (See NFPA 58, Chapter 2).
4. Install a pressure gauge, or a fitting for inserting a gauge, downstream of the first-stage regulator, for monitoring pressure, and performing a lock-up on the initial installation, and to verify regulator outlet delivery pressure(s) during the annual regulator inspection.

Inspect each high pressure regulator at least once each year, at intervals not to exceed (15) months, to determine its outlet pressure and its physical condition, to include the external surface, adjusting spring, vent opening, and the stability of its mounting. **Record the results.** In addition, the regulations require a test to be conducted annually to determine if the overpressure protection device (internal or external relief valve) is of sufficient capacity for the system, if feasible. If not feasible, a calculation must be made on an annual basis to ensure the capabilities of the relief device.

Key Valves - 192.747

- A. Key valves are distribution line valves that are installed to shut down or isolate sections of the system in an emergency or for service. Install one at each high-pressure regulator, and at any other location appropriate for isolating piping sections. All valves must be readily accessible.
- B. To prevent a potential hazard, do not operate a key valve without the full understanding of its function. No valve should be opened where there is a pressure difference across the valve until the difference is fully understood and it is safe to open the valve.
- C. Inspect and service each key valve according to the valves manufacturing instructions, including the service valve on the storage tank(s), at least once each year, at intervals not to exceed 15 months. Ensure the handle is not “frozen”, the valve is free from leaks, the valve is readily accessible and ground movement is not creating a shear force on the connections. **Record the results.**

Maximum Allowable Operating Pressure

The high pressure or 1st stage lines should be operated at approximately 10 psi or at a pressure that will maintain the required pressure in the distribution lines, but will not operate at pressures over 15 psi that could cause re-liquefying in the lines. The

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1st stage regulator cannot be at a pressure that would be so high that if the second stage failed completely it would deliver more than two psi to the utilization equipment.

Pressure Test

Although NFPA 58 requires testing to be at the operating pressure or above, company policy requires testing must be at least **[1-1/2]** times the maximum operating pressure. All pressure tests shall be done according to appendix D of NFPA 54. **Record results.**

Accidental Ignition of Gas - 192.751

- A. Take precautions to prohibit all sources of ignition from pedestrian, vehicular or other workplace hazards in areas where the presence of gas from leakage, purging or venting may constitute a hazard of fire or explosion. Use appropriate warning devices, signs and/or barricades, as necessary, route traffic as far away from the area as practical. Use non-sparking tools and lights that are approved for hazardous locations.
- B. Vent gas during maintenance, servicing or purging only after potential sources of ignition are removed, and in accordance with NFPA 58, Section 4.3. Use vertical stack. Use a flare stack for a controlled burn, if appropriate. If it is necessary to release a potentially hazardous mixture in a pit or trench, ensure you have constant ventilation, and you have a satisfactory CGI meter test before permitting work in the space. Ensure fire extinguishers are readily available.
- C. Notify the local fire department when flaring or releasing more than minimal quantities of gas. It is also good public relations to notify residences and businesses in the area when the flaring would attract attention or concern from the public.
- D. When service is discontinued to a customer, close the service valve and secure it with a lock or other device, or install a mechanical device or fitting that will prevent the flow of gas in the line to prevent unauthorized use or resumption of service.

Other Equipment

Other equipment installed or used in a gas system, such as, but not limited to, vaporizers, vapor meters, leak detectors, etc., should be listed or approved, and

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installed and operated in accordance with the manufacturer's instructions and the authority having jurisdiction.

Manufacturers' Literature

Manufacturers' literature, to include specifications, installation and operating instructions should be maintained for all equipment installed and serviced in the gas system.

Maintenance Schedule

Maintain a schedule of maintenance, tests and inspections required. The schedule should be posted and available to all involved personnel. To determine the adequacy of existing procedures, documents of work performed, such as Service Work Orders will be reviewed by supervisors. **Maintenance records are kept in the individual jurisdictional systems folders.**

Procedures for Start-up and Shut-down

Start-up: To assure operation within established Maximum Allowable Operating Pressure limits for a particular system, and unless otherwise provided for in another section of this manual, no gas shall be introduced into a distribution line unless high pressure, or first stage, and final stage regulators, as well as overpressure protection devices, are installed in the piping.

Shutdown: System shutdown shall occur at the container(s) shut-off valve, and/or other key valves that are located upstream of a pressure regulating device, and overpressure protection device.

Corrosion Control - Subpart I

Aboveground Steel Piping and Tanks - 192.481

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Properly prepare and paint all aboveground steel pipes and tanks exposed to atmospheric corrosion at time of installation. Inspect aboveground pipe and tanks at least every three (3) years, and repaint or recoat as necessary. Piping will be tested with a pit gauge when pits are visible. All unsuitable piping will be removed. Container pitting or corrosion should be checked against the guideline of CGA Pamphlet 6. Record inspection results.
Steel Piping and Tanks - 192.455(a), 457(b)

- A. Corrosion work will be performed by a qualified employee of **[Insert Company Name]** or if need be an outside corrosion specialist
- B. Steel pipe installed before July 31, 1971. Company determines any areas of active corrosion by electrical or leak detection survey or other comparable means on bare pipe or poorly coated pipe and cathodically protects any areas of active corrosion. **192.457 (b)**
- C. Steel pipe installed after July 31, 1971. Wrap all pipe, using X-Trucoat or equivalent, or coat with bitumastic or equivalent. Coat all fittings. Properly apply the coating to ensure that it adheres to the metal surface sufficiently to prevent the entrance of moisture, and that it covers the metal surface completely with no “holidays”. Inspect the coating before laying the pipe and backfilling to ensure there is no damage. Backfill with dirt or sand free from rocks or other material that could damage the coating. Cathodically protect the pipe using a qualified technician with corrosion experience. Ultimately the negative 850-mv criteria must be met.

Pipelines that show evidence of localized pitting or generally corroded area must be repaired or replaced. Replacement steel pipe must also be coated and cathodically protected.

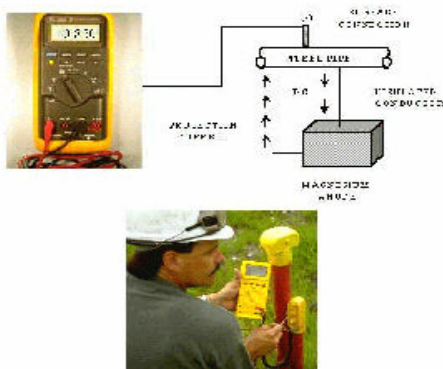
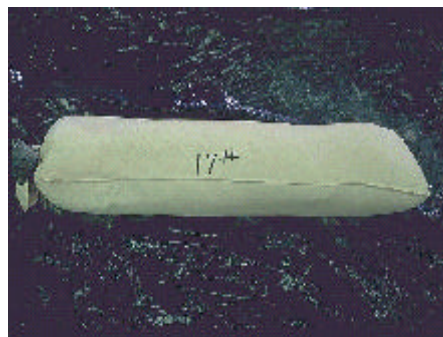
Design and Testing - 192.453, 463, 465(a), 465(c), 467, 471, 473, 483, 487

Underground steel mains, including underground tanks will be tested annually not to exceed fifteen months to prove that the systems are being cathodically protected. **192.465 (a)** Although there are five acceptable methods of testing in Appendix D of 49 CFR 192, **[Insert Company Name]** uses the –850-mv criteria. **192.463** Aboveground piping and tanks will be inspected for atmospheric corrosion at no longer than three-year intervals, although LP tanks are observed much more frequently by the propane delivery person as required by NFPA 58.

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For more information on corrosion and compliance refer to 49 CFR Part 192 Subpart I and CHAPTER VIII of The Training Guide for Operators of Small LP-Gas Systems.



This training guide provides information on corrosion control that gives operators who have little or no experience in the cathodic protection field, some of the general principles and practices of cathodic protection. Common causes of corrosion, types of pipe coatings, and criteria for cathodic protection are typical topics discussed. Basic definitions and illustrations are used to clarify the subject. This training guide can be used as a reference guide for useful information while implementing the Operation & Maintenance & Emergency Plan. It is not part of the plan.

[Insert company] typically uses copper or polyethylene pipe for its underground piping. See system report/s to see what type of pipe is used and if underground or aboveground tank is used.

For underground tanks the company uses two 17# anodes for 1000-gallon tanks and one 17# anode for 500-gallon tanks. **[Insert company]** uses the -850 millivolt criteria. Adequate time is allowed between installing anodes and testing to ensure that the ions have had a chance to travel to the tank through the electrolyte (ground). Testing will be done when the soil conditions are damp rather than dry. If the -850 millivolt criteria is not achieved by this method or when annual testing of tank(s) shows insufficient readings, then more anodes must be added until the -850 millivolt criteria is met. A knowledgeable person such as a corrosion technician

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(may be an outside consultant) will design larger tank installations for anode amount and placement. **192.453**

1. [Omit the following if no rectifiers are used.] All rectifier reverse current switches, diodes and interference bonds whose failure would cause system failure will be inspected and electrically tested for proper performance. Testing will be done at least (6) times a year, with intervals not to exceed 2-1/2 months. All other interference bonds will be tested each calendar year not to exceed fifteen months. **192.465 (c) Record the results.**
2. Company will cathodically protect all steel pipe and tanks installed underground after July 31, 1971, in addition to the corrosion protection prescribed above, using anode bags or a rectifier system that will maintain a negative voltage of at least -0.85 volt, with reference to a saturated copper-copper sulfate half cell. Cathodically protect tanks that are underground or mounded by including them in the protective system for the pipe, or isolate them with insulating fittings and protect them separately. Establish test points, as appropriate for the system, to periodically determine the adequacy of the cathodic protection through electrical measurements. **192.463**
3. Install an insulating fitting above ground, upstream of the vapor meter, to isolate the protected underground piping. If above ground storage tank(s) are used, install an insulating fitting when necessary to join dissimilar metals underground. **192.467**
4. Test lead wires will be connected to the pipeline or tank so as to remain mechanically secure and electrically conductive. These connections will be observed during annual corrosion testing. In some cases testing is done directly to a tank fitting. **192.471**
5. For valid interpretation of the voltage measurement, voltage (IR) drops other than those across the structure-electrolyte boundary must be considered. When testing an underground tank, readings not directly over the anodes shall be at least -850 -mv.
6. Whenever an underground system is installed, careful consideration will be given to locate the system against stray currents. Any existing systems that are having problems with stray currents will be evaluated and remedial action will be taken. All cathodically protected systems will be installed with consideration to minimize harm to other underground systems in the immediate area. **192.473**
7. Whenever a section of pipeline is removed from a system due to corrosion, the replaced section will be properly prepared and a suitable coating will be applied and will be cathodically protected. **192.483**

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8. All general and localized corrosion will be evaluated visually or if there are pits with a pit gauge. If after gauging it is discovered that the remaining wall thickness is not sufficient to support the maximum allowable pressure of the pipe or the remaining wall thickness is less than 30 percent of the named wall thickness, then pipe will be replaced. **192.487**

Inspection of Exposed Underground Pipe - 192.459

Whenever any buried pipeline is exposed for any reason, inspect it for evidence of external corrosion. Where there is general or localized corrosion to the extent that leakage might result, repair or replace the pipe. Where corrosion has reduced the wall thickness to less than 30% of the nominal thickness, replace the pipe. Coat or wrap and cathodically protect any replacement or repaired pipe. **Record the results.**

Internal Inspection of Pipe - 192.475

Whenever steel pipe is removed for any reason, inspect the internal surface for corrosion. If internal corrosion is found, investigate the adjacent sections of pipe. Where general corrosion or pitting is found and is such that leakage might result, replace the pipe in accordance with the section above. **Record the results.**

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EMERGENCY PLAN - 192.615

Designated employees are to be trained in response to emergencies that may occur on jurisdictional gas systems. These emergencies may include, but are not limited to, the following:

- A. Uncontrolled leaks considered hazardous.
- B. Fire or explosion.
- C. Failure of or danger to major segments of the system.
- D. Natural disasters (floods, tornadoes, hurricanes, earthquakes, heavy snow fall, etc.)
- E. Interruption of gas service.
- F. Civil disturbance (riots, etc.)

Training Will Be Documented and Made Available. - 192.615(b) (2)

No emergency plan can cover all situations and conditions. There is no substitute for sound judgment by the persons involved. In any emergency, the safety of people is the highest priority.

General emergency planning is provided below. [Modify or amend these plans to meet your situation and capabilities. In addition, the information that is specific for each system should contain directions and requirements for various emergencies. (An example would be location of emergency valves).]

Pre-Planning – 192.615(a) (2), 615(b) (1), 615(b) (2), 615(b) (3), 615(c) (3)

- A. A review of this Manual will occur at least once a year and any changes will be issued and reviewed with the proper personnel. This includes both management and emergency response employees. **192.615 (b)(1), (b)(2)**
- B. Maintain liaison with the appropriate public officials, including police, fire departments, local emergency response groups and hospitals with respect to emergency procedures. This liaison will be periodic personal contact to discuss the appropriate operations and the response talents of all parties that could be involved in an emergency. New information and/or requirements will be

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discussed and verification of all participants contact methods made (i.e. home, office, pager, numbers etc.). Provide training to various organizations. **192.615(a) (2), 192.615 (b) (3) (c) (3) See also 192.616.**

Training for Fire Departments

Training for fire departments is a must. Appropriate fire departments should be approached at least annually for training of their new personnel and refresher training for others. The training should cover as a minimum.

- A. Propane properties, as they affect fire personnel. Operation of container valves.
- B. Emergency responses as outlined in the Emergency Response Procedures.

Emergency Telephone Numbers

Post emergency telephone numbers for police, fire, hospital, burn center, emergency response group, etc., on the telephones or in a highly visible location in the District Office. Use 911 if that is the proper emergency number for your location.

[Insert Emergency Telephone List]

Post emergency contact telephone numbers on plant gates for public use.

Ensure there is a positive method of contacting emergency personnel outside of working hours. Use an answering service or machine that directs the caller to a specific emergency contact. Ensure there is a qualified emergency employee on-call whenever the office is closed.

Have an internal emergency response list of personnel with names and telephone numbers prioritized.

[Insert List of Personnel Names and Telephone Numbers prioritized]

Maintain all repair equipment necessary to control an emergency in a location that is known to, and accessible to, all employees at any time, and ensure that appropriate employees know how to use the equipment that may be required from other sources.

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Discuss the various types of emergencies that could occur with the appropriate personnel.

Provide each new customer with packet containing information on odorization and procedures to follow in the event of a gas leak and a 24-hour emergency telephone number.

Each employee who delivers propane or installs or services the gas system should be alert to any unsafe or potentially unsafe condition or procedure that may be encountered. Correct the problem, if possible; if not, take action, to include shutting off the gas supply to the area, and report the situation to the appropriate personnel.

Response to Emergencies – 192.615(a)(8), 615(a)(10)

- A. When responding to an emergency, the **[insert company name]** designated qualified employee at the scene should take charge of actions to eliminate or bring the hazard under control, as outlined in the Emergency Response Procedures.
- B. If fire or other emergency response personnel are on the scene, the **[insert company name person]** is to identify him (her) self to the person in charge and provide information and assistance as may be required. **192.615 (a)(8)**
- C. **[Insert company name]** will conduct an investigation of its own as soon as possible after an incident. All appropriate personal will be provided procedures to follow as soon as possible after an incident. In some cases an independent consultant may be hired to assist in the investigation. Results of any incident will be critiqued so that future incidents may be prevented. **192.615 (a)(10), 192.617**

Emergency Response Procedures – 192.615(a)(1)

When any call is received it is identified and then classified. **192.615 (a)(1)**

The following are minimum responses by emergency personnel:

NOTE: Gas leaks are to be handled immediately. Gas service is not to be re-established until leaks are corrected and leak tests are satisfactorily performed.

1. First Notification of an Emergency During Working Hours.

- A. The person receiving the report is to obtain as much information as possible to enable the responding service person to better understand the situation; however, use common sense and consider possible danger to life and property when holding the caller on the telephone.

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B. In the case of a possible gas leak, advise the caller to:

- 1) Evacuate the building or area.
- 2) Extinguisher all open flames, including appliance burners, pilots and smoking material.
- 3) NOT to operate any electrical switches or thermostats, ring doorbells; use the telephone or light matches or lighters.
- 4) NOT to start a vehicle if the gas leak is outside.
- 5) Notify the resident manager or maintenance person.

C. Dispatch qualified **[Insert company name]** personnel to the scene.

D. Call the fire department (911) or other appropriate officials if the initial report dictates.

First Notification of an Emergency – 192.615(a)(4)

- A. Obtain as much information as possible; however, use common sense and consider potential danger to life and property when holding the caller on the telephone.
 - B. In the case of a possible gas leak, inform the caller of the safety precautions as outlined above.
 - C. Notify the fire department (911) and/or appropriate officials if the initial situation report dictates. See notification list.
 - D. Take all of the equipment to the scene that is considered necessary. If you will need assistance, either at the scene or in gathering the necessary equipment, request it from the appropriate management or call other employees directly. If specialized equipment is needed call from the list provided from PGANE.
- 192.615 (a)(4)**

[Insert Equipment List, Company Owned By and Telephone Numbers]

Leaks With Ignition (gas fire) - 192.615(a)(3)(ii), 615(a)(7)

Take the following action until the situation is corrected or until the fire department takes charge.

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- A. Always protect people first and then property.
- B. Keep bystanders well away from the scene. Assist with evacuation if requested by the person in charge. In the absence of the fire department or other emergency group, if tank failure appears probable to you, require evacuation to a minimum of 2000 feet (approx. ½ mile) from the tank.
- C. Stay upwind and isolate the leak by shutting off the gas at the storage tank or at a line valve. DO NOT EXTINGUISH THE FIRE UNTIL THE LEAK HAS BEEN STOPPED.
- D. Eliminate or reduce the exposure of portable containers to heat from the fire by removing them, if possible.
- E. If the tank is involved in the fire, apply water, if available, to the top of the tank to cool the metal and keep the pressure down.

Leaks Without Ignition - 192.615(a)(3)(i), 615(a)(5), 615(a)(6) (detected inside or near a building)

- A. Determine the danger of the leak using the appropriate equipment.
- B. Evacuate people if necessary. Always protect life first and then property.
- C. Stay up wind and isolate the leak by shutting off the gas supply at the tank or a line valve, upstream of the leak. If the location of the leak cannot be readily determined or there are multiple leaks, shut off the valve on the storage tank.
- D. Eliminate and prevent ignition sources in the area and downwind of the leak, to include vehicle traffic, smoking, non-explosion-proof flashlights, cell phones or other lights, flares, lighted appliances in buildings downwind of the leak, etc.
- E. Use a water mist spray, if available, to increase the dissipation of the vapor aboveground.

Explosion Near or On a Jurisdictional System - 192.615(a)(3)(iii)

Again: **Protect life first and then property before an investigation begins to identify cause.**

Natural Disasters - 192.615(a)(3)(iv)

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Generally, the hazards that can be expected are containers floating away, containers knocked off their bases and pipeline failures. Primary actions include:

- A. Give priority to the control of any leaks.
- B. Shut off the valves on containers that have broken loose. Inspect the containers for damage. Reset the containers or return them to **[insert plant? District yard? Etc.]**. Drain the containers of any water. Purge the container and treat with methanol before using.
- C. Inspect piping, regulators and meters for damage. Make necessary repairs or replacements. If the damage cannot be corrected at the time, isolate and lock off the affected portion of the system.

Civil Disturbances

The hazards generally encountered are from vandalism and may involve broken lines, open valves or damaged regulators and meters.

- A. Give priority to the control of any leaks.
- B. Make repairs. If repairs cannot be made at the time, isolate and lock off the affected portions of the system.

Damage to Major Segments of the System

Generally, others digging and damaging the piping cause this type of damage.

- A. Isolate the damaged sections. Make repairs. If repairs cannot be made at the time, lock off the isolated sections until repairs can be made. Ensure the remaining portions of the piping system are leak-free.
- B. Make sure there is no flammable concentration of gas pocketed in ditches or low-lying areas.

Blasting

- A. When you are aware of any blasting having been done in the vicinity of the gas system, survey the system to determine if there is any evidence of a leak or other damage. Respond to any hazardous conditions as outlined elsewhere in this Section.

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Interruption of Gas Supply - 192.615(a)(9)

- A. The primary objective is to determine the reasons for the interruption and correct the problem. Respond to any hazardous conditions as outlined elsewhere in this Section.
- B. Gas service is not to be resumed until conditions are corrected for safe operation, and all pressure/leak tests are satisfactorily performed.
- C. When restoring service to a system serving multiple customers, service is to be restored on a house-to-house basis. Shut each customer off at the service riser. Purge the lines, if necessary. Conduct a leak check of all service and house lines, using a water manometer and/or block gauge. If you cannot get into a house or metered service because the customer is not at home, do not restore service. Lock the customer's service off and leave a **[insert name of notice indicating that you could not get in]** in a conspicuous place requesting the customer to contact the gas company for restoring service.

Rules Applying to All of the Above Emergencies – 192.617

- A. When working with any gas tanks, make sure the area is kept free of ignition sources.
- B. When repairs have been made, make sure the area is free of flammable concentrations of gas, inside and outside of buildings in the area, using an quantitative combustible gas indicator.
- C. When repairs have been made to damaged piping, ensure the affected sections are leak-free before re-introducing gas. If repairs cannot be made to any part of the system at the time, the affected sections are to be made safe until permanent repairs can be made.
- D. Where appropriate, and under the direction of the **[insert company name]** Legal Department, failed equipment should be sent to a laboratory for examination for the purpose of determining the cause(s) of the failure and minimize the possibility of recurrence. **192.617**

Reporting Accidents

All accidents and incidents are to be reported in accordance with the reporting procedures in this manual.

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Media Contact, Public and Private Statements

No statement or release of any specific information is to be given without authorization from the **[Insert title of appropriate personnel]**.

Review of Emergency Response Plans - 192.615(b)(3)

After each emergency, whether actual or simulated, conduct a review of the procedures followed to determine if the emergency response plan was effective.

Public Education - (192.616)

All new and existing customers, the public, appropriate government officials and persons engaged in excavation will receive information explaining actions to be taken in the event of an emergency, such as notifying the **[Insert company name]** or appropriate public officials. This information will be given by mail distribution on an annual basis. Notification of all jurisdictional accounts will be given as needed, either by mail or in person, to all other appropriate officials. The information will be delivered through this or other media in all areas where the company has jurisdictional accounts.

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APPENDIX A

LEAKAGE SURVEYS AND METHODS OF GAS LEAK DETECTION

A leakage survey must be conducted over each pipeline system at intervals not exceeding 15 months, but at least once each calendar year.; Areas surveyed should be marked on a map of the distribution system, with the approximate location of each leak found.

(a) Where the following may be present, the frequency of the survey should be increased.

1. Material makeup of system. Certain materials may develop a higher than average leakage rate, such as unprotected steel pipe and coated steel pipe not under cathodic protection;
2. Age of pipe (over 20 years) and corrosive soil environment;
3. Pipe having a previous history of excessive leakage and the cause(s) have yet to be eliminated;
4. Pipelines in, under, or near buildings, especially schools, churches, hospitals, or other buildings having a high concentration of people;
5. Pipelines located in areas of construction, blasting or recent heavy weight traffic. Pipe located in crawl spaces under apartment buildings or mobile homes; and
6. Service lines in or under buildings and meters in buildings.

Available openings for finding leaks include water, sewer, electric, and telephone lines; manholes; cracks in pavement; and hollow walls (cinder block construction) in areas near gas piping.

When conducting these surveys check for leaks near the gas pipe entrance, both inside and outside the buildings.

If a leak is discovered, it must be investigated to determine if a hazardous condition exists. If so, immediate action must be taken, to include shutting off the gas system, if necessary, and the leak repaired.

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Warning Signs of a Leak

Odor: Gas is intentionally odorized so the average person can perceive it at a concentration well below the explosive range. Gas odor is the most common and effective indication of a leak. A report of gas odor should be investigated immediately, the leak found, and repaired if possible. In any case classify the leak and make sure that all Class I leaks are either repaired or reduced to a level of acceptable safety and scheduled for repair. This odorant may be filter out as it passes through soil. It may also be modified by passing through soil and into sewage systems containing vapors or fumes from other combustibles, as well as the sewage odor itself. Therefore, odor is not always totally reliable as an indicator of the presence or absence of gas leaks. Nevertheless, in making maintenance rounds, always be alert for the smell of gas.

Vegetation: Vegetation in an area of gas leakage may improve or deteriorate, depending on the soil; the surveys of changes in vegetation may indicate slow sub-soil leaks. Vegetation surveys should be supplemented with instrumentation.

Insects: Insects migrate to points or areas of leakage. They seem to like the smell of the gas odorant. Checks for heavy insect activity, particularly near the riser, the gas meter and regulator should be made.

Fungus-like Growth: Such growth in valve boxes, manholes, etc., may indicate gas leakage. The color of the growth is generally white or grayish-white and looks like a coating of frost.

Sound: Listen for leaks. A hissing sound at a bad connection, a fractured pipe or a corrosion pit hole is the usual indication of a gas leak.

Unaccounted for Gas or Unusual Increase in Delivery: A possible gas leak may be indicated when there is an unusual shortage when reconciling inventory or when it is noted that the gallons delivered have an unusual increase over previous deliveries without any known reason.

Qualification of Personnel

Gas leakage surveys should be performed by personnel who are qualified by training and experience in the type of survey being performed. They should be thoroughly familiar with the characteristics of the petroleum gas in the system and trained in the use of leakage detection instruments.

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Reports from Outside Sources

Any notification from an outside source (such as police or fire department, other utility, contractor, customer or general public) reporting an odor, leak, explosion or fire which may involve gas pipelines or other gas facilities should be investigated promptly. If the investigation reveals a leak, the leak should be graded and action should be taken in accordance with these guidelines.

Odors or Indications from Foreign Sources

When leak indications (such as gasoline vapors, natural, petroleum, sewer or marsh gas) are found to originate from a foreign source or facility or customer owned piping, prompt actions should be taken where necessary to protect life and property. Potentially hazardous leaks should be reported promptly to the operator of the facility and, where appropriate, to the police department, fire department or other governmental agency. When the company's pipeline is connected to a foreign facility (such as the customer's piping), necessary action (such as disconnecting or shutting off the flow of gas to the facility) should be taken to eliminate the potential hazard.

Leakage Surveys and Test Methods

For leakage surveys, see the limitations under **192.723** regarding leak detection equipment. The following gas leakage surveys and test methods may be employed, as applicable, in accordance with written procedures.

- Sub-surface gas detector survey (including bar-hole surveys)
- Bubble leakage test
- Pressure drop test

Other survey and test methods may be employed if they are deemed appropriate and are conducted in accordance with procedures, which have been tested and proven to be at least equal to the methods listed in this section.

The surface gas detection survey and vegetation survey methods used for natural gas systems are not recommended for use on petroleum gas systems. Petroleum gases are heavier than air and will frequently not come to the ground surface or cause surface indications in the vegetation. However, the surface gas detection survey, when properly conducted by taking into account that the gas is heavier than air, may be used adjacent to aboveground facilities.

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(a) Sub-surface gas detection survey

1. Definition. The sampling of the sub-surface atmosphere with a combustible gas indicator or other device capable of detecting 10 percent of the LEL at the sample point.
2. Procedure. The survey should be conducted by performing tests with a series of bar holes immediately adjacent to the gas facility and in available openings (confined spaces and small substructures) adjacent to the gas facility. The location of the gas facility and its proximity to buildings and other structures should be considered when determining the spacing of sample points. Spacing of sample points along the main or pipeline will depend on soil and surface conditions but should never be more than 20 feet apart. Where the facility passes under paving for a distance of 20 feet or less, tests should be made at the entrance and exit points of the paved area. Where the paved area over the facility is 20 feet or greater in length, sample points should be located at intervals of 20 feet or less. In the case of extensive paving, permanent test points should be considered, particularly in low places. The sampling pattern should include tests at potential leak locations such as threaded or mechanical joints and at building walls at the service riser or service line entrance. All available openings adjacent to the facility should be tested.

When testing available openings for petroleum gas, readings should be taken at both the top and bottom of the structure. When testing larger confined spaces or basements, the floor areas including floor drains should be thoroughly tested because petroleum gases can lie temporarily in pockets containing explosive mixtures. Since migrating gas may not enter at the pipeline entrance, a perimeter survey of the floors and walls is recommended. When conducting the survey, all bar holes should penetrate to the approximate same depth in order to obtain consistent and worthwhile readings. This includes penetrating through capping materials such as paving, concrete, frost or surface sealing by ice or water. **The required depth of the bar hole will also depend upon the soil conditions, the depth of and pressure in the pipeline and the type of instrument being used.** The readings should be taken at the bottom of the bar hole. The probe used should be equipped with a device to preclude the drawing in of fluids. When conducting the survey, the inspector should use the most sensitive scale on the instrument, watching for small indications of combustible gas. Any indication should be further investigated to determine the source of the gas. Care should be taken to avoid damaging the pipe or coating with the probe bar.

3. Utilization. This survey method should be utilized for buried facilities. Good judgment should be used to determine when the recommended spacing of

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sample points is inadequate. Additional sample points should be provided under these conditions. Available openings (such as manholes, vaults and valve boxes) should be tested. However, they should not be relied upon as the only points used to test for petroleum gas leakage.

(b) Bubble leakage test

- (1) Definition. The application of a soap-water or other bubble forming solutions on exposed piping to determine the existence of a leak.
- (2) Procedure. The exposed piping systems should be reasonably cleaned and completely coated with the solution. Leaks are indicated by the presence of bubbles. The bubble forming solution should not be used on piping unless it has been determined by investigation or test that the piping is adequately resistant to direct contact with the solution.
- (3) Utilization. This test method may be used for the following:
 - i) Testing exposed above ground portions of a system (such as meter set assemblies or exposed piping on bridge crossings).
 - ii) Testing a tie-in joint or leak repair, which is not included in a pressure test.

(c) Pressure drop test

- (1) Definition. A test to determine if an isolated segment of pipeline loses pressure due to leakage.
- (2) Procedure. Facilities selected for pressure drop tests should first be isolated and then tested. The following criteria should be considered in determining test parameters:
 - (i) Test pressure. A test conducted on existing facilities solely for the purpose of detecting leakage should be performed at a pressure at least equal to the operating pressure.
 - (ii) Test medium. Propane.
 - (iii) Test duration. The duration of the test should be of sufficient length to detect leakage. The following should be considered in the determination of the duration:
 - The volume under test.

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- The time required for the test medium to become temperature stabilized.
- The sensitivity of the test instrument.

(3) **Utilization.** Pressure drop tests should be used only to establish the pressure or absence of a leak on a specifically isolated segment of a pipeline. Normally, this type of test will not provide a leak location. Therefore, facilities on which leakage is indicated may require further evaluation by another detection method in order that the leak may be located, evaluated and graded.

Leak Grades

Based on an evaluation of the location and/or magnitude of a leak, one of the following leak grades should be assigned, thereby establishing the leak repair priority.

- Grade 1 - a leak that represents an existing or probable hazard to persons or property and requires immediate repair or continuous action until the conditions are no longer hazardous.
- Grade 2 - a leak that is recognized as being non-hazardous at the time of detection, but requires scheduled repair based on probable future hazard.
- Grade 3 - a leak that is non-hazardous at the time of detection and can be reasonably expected to remain non-hazardous. Because petroleum gas is heavier than air and will collect in low areas instead of dissipating, few leaks can safely be classified as Grade 3.

Leak Classification and Action Criteria

Guidelines for leak classification and leakage control are provided in Chapter X, Tables 3a, 3b and 3c of the **Training Guide For Operators of Small LP-Gas Systems**. The examples of leak conditions provided in the tables are presented as guidelines and are not exclusive.

APPENDIX B - FORMS

LP-Gas Underground Tank and Gas Line Inspection

COMPANY: _____

This form is to be completed each time an LP-gas line is uncovered for inspection or any other reason, such as making service connections, main extensions, replacements, etc.

DATE: _____

01. Location: _____

02. Name of Inspector: _____

03. Designation: Tank _____ Main _____ Service _____

04. Age of Pipe/Tank: _____ Years Line/Tank Size: inches/gals. _____

05. Maximum Operating Pressure: _____

06. Pipe Specification: Steel _____ Plastic _____ Copper _____

07. Cathodic Protection Tank/Line: Yes _____ No _____

08. Coating: Yes _____ No _____

09. External Condition: Smooth _____ Pitted _____ Depth of Pits _____

10. Internal Condition: Smooth _____ Pitted _____ Depth of Pits _____

Name any existing conditions that could cause harm to the LP-gas system.

Corrective Measures Taken if Needed:

Anodes Installed: How many? _____ Size _____ Location _____

Soil conditions surrounding tank/pipe: _____

LP-Gas System Leak Survey Report

COMPANY: _____

Receipt of Report: _____

Date: _____ Time: _____

Location of Leak: _____
(Address, intersection, etc.)

Reported by: _____

(Name) (Address)

Description of Leak: _____
(Inside/outside)

Leak Detected by: _____

Leak Reported by: _____

Report Received by: _____

Dispatched
Date: _____ Time: _____

Investigation Assigned to: _____
(Name)

Assigned as Immediate Action Required? Yes _____ No _____

Investigation
Date: _____ Time: _____

Investigation by: _____ Leak Found? Yes _____ No _____

CGI Used? Yes _____ No _____ Leak Grade: 1 2 3

Location of Leak: _____

Cause of Leak: _____

Condition Made Safe: Date: _____ Time: _____

Repair

See form 3 (LP-gas System Repair Report)

LP-Gas System Repair Report

COMPANY: _____

Grade of Leak

ADDRESS: _____

Grade I _____

Grade II _____

Grade III _____

SKETCH SHOWING LEAK/S LOCATED

METER SET

	Meter _____ No. _____ (if inspected)
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LEAK DATA

Detected By		Collecting		Probable Source		C.G.I. Test	
CGI Meter/ Bar Hole		In Building		Mainline		Gas Percent (%)	
Odor		Near Building		Service Line		L.E.L.	
Flame Pack		In Manhole		Tank/s			
Visual/Vegetation		In Soil		Valve			
Other		In Air		Meter Set			
		Other		Service Tap			

Pressure at leak		Surface		Leak Course	
Tank pressure		Lawn		Corrosion	
1 st stage piping pressure		Soil		Outside Force	
2 nd stage piping pressure		Paved		Construction Defect	
		Other		Material Failure	
				Other	

Component	Explanation	Part of System		Material Type	Size	Year Installed
Pipe		Main		Steel		
Valve		Service		Plastic		
Fitting		Meter Set		Copper		
Regulator		Customer Piping		Other		
Other		Tank/s				
		Other				

Pipe/Tank/s Condition: Good: _____ Fair: _____ Poor: _____

Coating Condition: Good: _____ Fair: _____ Poor: _____

Date Repaired: _____ Date Rechecked: _____

Signed: _____

Patrolling of LP-Gas System

An LP-gas system must be patrolled where anticipated physical damage might occur on the system resulting in failure or leakage to that portion of the system. Extreme weather conditions might cause conditions on systems that would require patrolling.

Frequency: When patrolling is required then the frequency of the patrol is as often as necessary, but no less than:

Business district; 4 times each calendar year, not exceeding intervals of 4½ months.

Outside business district; 2 times each calendar year, not exceeding intervals of 7½ months.

COMPANY: _____

Period Covered: Began: _____

Ended: _____

Areas Covered: _____

Map References: _____

Leakage Indications Discovered (describe locations and indications, such as a condition of vegetation):

Describe any unusual conditions and their locations in the system: _____

Other Factors noted which could affect present or future safety or operations of the gas system:

Follow-up (repairs, maintenance or test resulting from this inspection): _____

Comments: _____

Signature of person in charge of patrol: _____

Date: _____

Regulator Inspection Report

COMPANY: _____

Location: _____

Regulator # 1

Make: _____ Model: _____

Size: _____ Orifice Size: _____

Pressure at inlet: _____ Pressure at outlet: _____

M.A.O.P. of System to which it is connected: _____

Regulator # 2

Make: _____ Model: _____

Size: _____ Orifice Size: _____

Pressure at inlet: _____ Pressure at outlet: _____

M.A.O.P. of System to which it is connected: _____

Regulator # 3

Make: _____ Model: _____

Size: _____ Orifice Size: _____

Pressure at inlet: _____ Pressure at outlet: _____

M.A.O.P. of System to which it is connected: _____

Does regulator have an internal relief valve? Yes _____ No _____

Was regulator checked for lock up? Yes _____ No _____

Is regulator protected against damage from outside forces? Yes _____ NO _____

Was vent and screen checked for blockage? Yes _____ No _____

Signature: _____

Date: _____

External Relief Valve Inspection Report

COMPANY: _____

Location: _____

Relief Valve Information

Make: _____ Type: _____

Size: _____ Orifice Size: _____

Type of Loading:

Spring: _____ Pilot: _____ Other: _____

Range: _____

Pressure Setting: _____

Connecting Pipe Size: _____

Vent Stack Size: _____

Capacity:

General Condition of:

Relief Valve: _____

Support Piping: _____

Weather Protection: _____

General Area: _____

Repairs Required and Made: _____

Remarks: _____

Inspector: _____

Signature: _____ Date: _____

Key Valve Inspection Report

Frequency: - annually

System: Name: _____

Location: _____

Number of Valves: _____

<u>Location /Type / Use</u>	<u>Results / Actions</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

General Comments: _____

Signed: _____

Dated: _____

Plot Plan

Prepared By: _____ Date Prepared: _____

System: Name: _____

Location: _____

(System map showing tanks, mains and service lines with tank and pipe sizes and distances, key valve locations, cathodic protection system, regulators and pressures and other utility lines.)

Sniff Test Report

Frequency: At a minimum, each time LP-gas is delivered to an operator’s plant or when LP-gas bypasses the plant. Note: In large systems it may be necessary to use instrumentation to verify the odorant at certain locations of the system.

System: Name _____

Location: _____

Test Point: _____

Date: _____ Time: _____ Test Person_____

Odor Level: Nil: _____ Barely Detectable: _____ Readily Detectable:_____ Strong: _____

Test Point: _____

Date: _____Time: _____Test Person: _____

Odor Level: Nil: _____ Barely Detectable: _____ Readily Detectable: _____

Strong: _____

Test Point: _____

Date:_____ Time: _____ Test Person:_____

Odor Level: Nil: _____ Barely Detectable: _____ Readily Detectable: _____

Strong:_____

Remarks: _____

Signed:_____

Telephonic Report of Customer Leak

COMPANY: _____

Customer Leak Information

Time Call Received: _____ a.m./p.m. Date: _____

Name of Caller: _____ Caller's Phone Number: _____

Name of Customer if not Caller: _____

Address of Leak: _____

Nature of Complaint: Odor (☐) Blowing Gas (☐) Dead Vegetation (☐)

Other (describe): _____

Is the gas odor or sound inside the residence? Yes _____ No _____

If so, where is it located? (at the water heater, at the heating system, at the stove, in the hall, in the kitchen, etc.): _____

Is the gas odor or sound outside the residence? Yes _____ No _____

If so, where is it located? (at the meter, near the street, at the house, at the tank/s, at the pool, at the gas grill, etc.): _____

How long have you been smelling or hearing the gas? _____

Will someone be home for us to check the leak? Yes _____ No _____

Leak Response Information

Time Dispatched Investigator: _____ am/pm Date: _____

Name of Investigator: _____

Time of Investigator's Arrival at Scene of Leak: _____ am/pm

Action Taken: _____

Time of Investigator Completion at Scene of Leak: _____ am/pm

Additional Follow-up (if needed): Yes _____ No _____

If so, what type of follow-up: _____

Additional Remarks: _____

Signature of Investigator: _____

Signature of Supervisor: _____

Atmospheric Corrosion Control Inspection

Frequency: A minimum of every three years although it is recommended to inspect the system for atmospheric corrosion annually during other annual inspection requirements.

System: Name _____

Location: _____

Type of Structure: Tank / size and age: _____
Main / size and age: _____

Service / size and age: _____ Operating Pressure _____

Condition of paint and surface of:

Tanks: _____

Piping: _____

Meters: _____

Fittings: _____

Vaporizers: _____

Other: _____

Corrective Measures to be taken: _____

Signed: _____

Dated: _____

Cathodic Protection Survey

Frequency: Annually

System Name: _____

Location: _____

Surveyed By: _____

Date Surveyed: _____

Starting Location of Survey: _____

Ending Location of Survey: _____

Underground Tank/s : Yes _____ No _____

Readings Around Tank(s) Remote From Anodes:

Reading #1 _____ Reading #2 _____

Reading #3 _____ Reading #4 _____

Take copper sulfate half-cell readings at approximately 20 foot intervals along the mains and service lines.

FT	RDG	FT	RDG	FT	RDG	FT	RDG

Signed: _____ Date: _____

Corrosion Control – Rectifier Inspection

COMPANY: _____

LOCATION: _____

BRAND OF RECTIFIER: _____

RECTIFIER SERIAL NUMBER: _____

Date	Supply Voltage	Output Volts	Output Amps	Rectifier Condition	Remarks

Signature: _____

Date: _____

Pipeline Test Report

OPERATING COMPANY: _____

Testing Company: _____

This form must be completed for each section of newly installed section of pipe or service line and on each service line that is disconnected from the main for any reason.

Test Data

Type of Pipe: _____

Size of Pipe: _____ inches Length of Line: _____

Location of Line: _____

Tested with: Nitrogen () Air () Propane Vapor () Water ()

Other (describe): _____

Time Started: _____ am/pm Time Ended: _____ am/pm

Test Pressure Start: _____ psi

Test Pressure Stop: _____ psi

Line Loss noted? : Yes _____ No _____

Reason for Line Loss: _____

Corrective Measures Taken: _____

Remarks: _____

Company Representative: _____

Signature: _____ Date: _____

Appendix C

System Report

Name: _____

Location: _____

Date Installed: _____ # of Customers _____

Any Portion in a "Public Place": _____ Yes _____ No

Tanks

1. No. Above ground + size _____

2. No. Below ground + size _____

3. If #2, Cathodically
Protected? _____

4. If #2, Coated? _____

5. Protected from Outside Force _____

Pipeline

1. Approx. Feet Steel _____

2. Approx Feet Plastic _____

3. Approx Feet Copper _____

4. If #1, Cathodically
Protected? _____

5. If #1, Coated? _____

Pressure

1. MOP

2. MAOP

3. Test Pressure at
Installation

APPENDIX C Continued

Regulators**Stage 1**

1. Manufacturer

2. Size and Model

3. Relief Protection?

Stage 2

1. Manufacturer

2. Size and Model

3. Relief Protection?

Meters

1. # of Meters

2. Protected from Outside Force

APPENDIX M – Manufacturers Instructions

<Insert copies of manufacturers instructions behind this page.>